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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------------|---------------------|------------------|
| 10/814,213 | 03/31/2004 | William H. Simendinger III | 9248-6 | 6014 |
| 20792 | 7590 | 01/07/2005 | EXAMINER | |
| MYERS BIGEL SIBLEY & SAJOVEC PO BOX 37428 RALEIGH, NC 27627 | | | ZIMMER, MARC S | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1712 | |
| DATE MAILED: 01/07/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/814,213 | SIMENDINGER ET AL. | |
| | Examiner | Art Unit | |
| | Marc S. Zimmer | 1712 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15 is/are allowed.
- 6) ☒ Claim(s) 16-22 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Sp cification

The Specification is objected due to inconsistencies throughout that elicit questions as to what exactly is Applicant's invention.

In the paragraph bridging pages 1 and 2 of the Specification, a description of a composition is offered that is identical to the composition recited in claim 1. Indeed, the paragraph discloses a composition comprising (i) a glassy matrix comprising an alkoxy-functionalized siloxane and a functionally-terminated siloxane or silane and (ii) a polymethylsilsesquioxane dissolved in a crosslinking agent as the essential ingredients of the claimed invention. Fillers of undefined constitution and hollow glass microspheres are identified as optional materials. Notably, component (i) is delineated as being a glassy material but this would appear to be an inaccurate characterization unless the two compounds that make up component (i) were reacted. However, there is no indication that the glassy matrix is derived from, or a reaction product of, said alkoxy-functionalized siloxane and functionally-terminated siloxane/silane. Rather, the language plainly states that the glassy matrix is "comprised" of these materials.

On the other hand, page 2, lines 25-27 hold that the glassy matrix and polymethylsilsesquioxane are crosslinked separately of one another thereby suggesting that, in fact, the aforementioned ingredients that make up component (i) are reacted prior to combining with the materials of component (ii). This passage notwithstanding, a reaction between the alkoxy-functionalized siloxane and functionally-terminated siloxane/silane is not reflected in the Examples which

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ostensibly are representative of the composition/method contemplated by Applicant.

In Example 1, there is mention of a reaction wherein silanol-terminated polydimethylsiloxane, which the Examiner believes is supposed to be typical of the functionally-terminated siloxane, is reacted in the presence of the 2,4-pentanedionate chelate of titanium diisopropoxide to "terminate" the silanol endgroups. (It is not absolutely clear how this operation constitutes a silanol-termination step. Instead, it appears merely to be a chain-lengthening step wherein two or more chains are reacted at their ends to form a new siloxane bond with the concomitant loss of an equivalent of water. The resulting chain-extended polymer would still have silanol at the end that is not reacted.) The product of this sequence is kept separate of component (ii), a fact that is not reflected in the earlier description of the composition. If components (i) and (ii) are to be kept separate of one another until such time as the coating is to be applied to a substrate than the broader description should have indicated this distinction by referring to the composition as a two-part composition wherein the parts to be separated are clearly outlined.

Example 1 then instructs the practitioner to add the remaining ingredients, which presumably would include the alkoxy-functional siloxane polydiethoxysiloxane to the mixture comprising the reaction product of the silsesquioxane and the crosslinking agent titanium isopropoxide. This disclosure is at odds with the earlier statements that the alkoxy-functionalized siloxane and functionally-terminated siloxane are mixed together to form the glassy matrix.

To summarize, there is a suggestion that the alkoxy-functionalized siloxane and functionally-terminated siloxane/silane are pre-reacted prior to their combination with the silsesquioxane (page 2, lines 25-27) but the broader description of the glassy matrix does not say anything about these materials having been reacted. Further, in the Examples, there is no evidence of these materials having even been mixed together as the silanol-terminated polydimethylsiloxane (product derived therefrom) is kept separate of the silsesquioxane to which the polydiethoxysiloxane has been added. Insofar as there appears to be some importance attached to the order of addition and the pre-reaction of specified materials, Applicant is required to clarify these apparent inconsistencies.

Claim Objections

Claim 10 is objected to because tetramethoxysilane and tetraethoxysilane are not embodiments of a siloxane.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 16-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. While the Specification is enabling

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for the claimed composition, it is not enabling for the claimed process. The process is disclosed only by way of Example and the process steps set forth in claim 16 are not supported by the Specification at least for the reason that there is no indication that the alkoxy-functionalized siloxane is involved in the termination of silanol groups. Furthermore, it is unclear what the source of the silanol groups is in claim 16 as the only other material mentioned is a "functionally-terminated silane" that is not required to have silanol groups. (The whole premise of a functionally-terminated silane is, in itself, confusing since silanes are monomeric compounds and, hence, seem to be devoid of ends. The Specification provides as an example aminopropyltriethoxysilane where it is understood that the amine functional group appears at the end of the alkylene bridging moiety opposite the silane but where the silane has terminal silanol groups, they would have to be bonded the central silicon atom where there is no obvious end.)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is no antecedent basis in claim 16 for mention of silanol groups as neither of the materials disclosed earlier in the claim explicitly possess this structural attribute.

Claim Analysis

For the purpose of evaluating the claimed composition against the prior art, the glassy matrix has been interpreted as being a mixture of the alkoxy-functionalized siloxane and functionally-terminated siloxane/silane as opposed to a reaction product derived therefrom. Also, the composition is being treated as a one-part composition where all four materials may be present at the same time. (Although there is evidence that some of the materials are pre-reacted and/or are kept isolated from one another prior to the use of the composition, the language employed in claim 1, which is fully supported by the paragraph bridging pages 1 and 2 of the Specification, does not reflect these aspects.)

Given the breadth with which the second material making up the glassy matrix is disclosed, the functionally-terminated siloxane may be terminated with alkoxy groups. In this instance, a requirement for each material recited as a constituent of component (a) is satisfied by a reference that teaches alkoxy-terminated polysiloxane as one of its essential components.

Allowable Subject Matter

Claims 1 to 15 appear to be allowable as they have been interpreted by the Examiner. While the prior art contains teachings of compositions comprising alkoxy-functionalized silicones and methysilsesquioxanes in admixture, the Examiner was unable to find a composition having materials corresponding to all four components outlined in (a) and (b) of claim 1. Takeda et al., U.S. patent # 4,510,283 teaches a coating formulation comprising a polymer prepared by polycondensation of a tetraalkoxysilane and a polysilsesquioxane. In view of the

approach by which the former is synthesized, it is the position of the Office that this material alone would satisfy the requirements for both an alkoxy-functionalized siloxane and a functionally-terminated siloxane as the resulting polymer would inherently possess either alkoxy- or hydroxy terminal moieties. On the other hand, there is no ingredient disclosed that would correspond to the crosslinking agent presently claimed. Hishii et al., JP 60-254034 A teaches a similarly-constituted coating mixture that is also devoid of a component analogous with the claimed crosslinking agent. (Indeed, in this instance, the polydialkoxysiloxane is characterized as being the crosslinking agent for the silsesquioxane polymer.) Balaba et al., U.S. Patent # 5,492,730 teaches a method (Example 2) wherein a substrate is coated sequentially with a polydimethoxysiloxane and a polymethylsilsesquioxane but fails to contemplate the claimed composition or process.

Applicant is advised that, depending upon their explanation of the apparent inconsistencies in their disclosure, the claims may be subject to an entirely new search contingent upon any different interpretation of the claims gleaned from their response.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

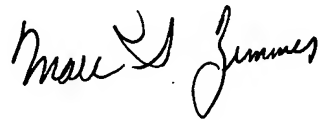
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302.

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The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 4, 2005

A handwritten signature in cursive script that reads "Marc Zimmer".

Marc Zimmer
AU 1712